ECONOMICS 101
COLUMBIA COLLEGE

QUIZ #1B
Paul Geddes

NAME:  ANSWERS
31 January 2017

TOTAL 50 Points. You have 55 minutes. Please place answers on test in space provided but you MUST show work either in the space below or on the attached sheets for credit. Please SHOW WORK CLEARLY.

A. Demand and Supply (18 pts)
PRICE: 3 6 9 12 15 etc.,
QUANTITY DEMANDED: 68 56 44 32 20 etc.,
QUANTITY SUPPLIED: 5 20 35 50 65 etc.,

1. \( Q_d = -4P + 80 \)  
2. \( Q_s = 5P - 10 \)  
3. \( P = 10, Q_d = 40 \)  
4. \( Q = \frac{20+10}{2} = 15 \)
5. \( 5 \) \( Q = \frac{40}{2} = 20 \)
6. \( S = \frac{(40-60)}{2} = 160 \)

B. Ceiling/Floors (12 pts) Same Demand and Supply as B above, but now the government passes a law to keep the price above $15.

1. \( \min \left[ \frac{20+65}{2} = 20 \right] \)  
2. \( B \left[ \frac{12+20}{2} = 22 \right] \)  
3. \( S \left[ \frac{20+140}{2} = 150 \right] \)  
4. \( \frac{20+10}{2} = 15 \)

C. Ceiling/Floors (12 pts) Same Demand and Supply as B above, but now the government passes a law to keep the price above $15.

1. \( \min \left[ \frac{20+65}{2} = 20 \right] \)  
2. \( B \left[ \frac{12+20}{2} = 22 \right] \)  
3. \( S \left[ \frac{20+40}{2} = 15 \right] \)  
4. \( \frac{20+10}{2} = 15 \)

B. (15 pts) Comparative advantage. You are one of three people stuck on a deserted island with only two valuable things to do with your time: catch fish or gather coconuts. Here are the maximum daily capabilities of you and your companions:

<table>
<thead>
<tr>
<th>Units of Fish</th>
<th>Units of Coconuts</th>
<th>Cost of Fish</th>
<th>Cost of Coconuts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alan</td>
<td>6</td>
<td>2</td>
<td>( \frac{1}{3} )C</td>
</tr>
<tr>
<td>Betty</td>
<td>2</td>
<td>4</td>
<td>2C</td>
</tr>
<tr>
<td>Carl</td>
<td>5</td>
<td>15</td>
<td>3C</td>
</tr>
<tr>
<td>Denise</td>
<td>10</td>
<td>5</td>
<td>( \frac{1}{6} )C</td>
</tr>
</tbody>
</table>

1. Alan \( \rightarrow \frac{1}{3} \)C  

2. Who has the comparative advantage in catching fish? What is his (her) cost?

2. Draw a marginal opportunity cost curve (the supply curve) for fish. (all four survivors must be in this curve.)
3. If the survivors want 9 fish per day, what is the most coconuts we can get per day? In a table, show how many fish and how many coconuts each survivor will catch to achieve this.

\[
\begin{array}{ccc}
A & 6 & C \\
B & 0 & 4 \\
C & 0 & 15 \\
D & 3 & 3.5 \\
\hline
9 & 22.5 \\
\end{array}
\]

\[26 - 22.5 = 3.5 \text{ Coconuts}\]

2. \(\boxed{3.5 C}\) What is the (minimum) cost of catching 12 fish? (cost of 12 fish = 5 coconuts)

5. If the survivors want 18 coconuts per day, what is the most fish we can get per day? In a table, show how many coconuts and how many fish each survivor will catch to achieve this.

\[
\begin{array}{ccc}
A & 6 & C \\
B & \frac{3}{2} & 3 \\
C & 6 & 15 \\
D & 10 & 0 \\
\hline
16.5 & 16 \\
\end{array}
\]

C. Comparative Statics (5 pts)
In the diagram, draw the new curves and use arrows to show the direction of change. Then circle the best answer for each of the following four statements.

1. There are only two types of jobs in our small town. Some people work milking cows and everybody else catches fish. What happens to the market for our town’s fish if a new study says that drinking milk is bad for your health?

- Demand will SHIFT RIGHT/ SHIFT LEFT/ NO SHIFT
- Supply will SHIFT RIGHT/ SHIFT LEFT/ NO SHIFT
- Equilibrium PRICE will RISE/ FALL/ UNCERTAIN CHANGE
- Equilibrium QUANTITY will RISE/ FALL/ UNCERTAIN CHANGE
A. Market Power (40 pts) The market for widgets is:

<table>
<thead>
<tr>
<th>P</th>
<th>Qd</th>
<th>Qs</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>16</td>
<td>1</td>
</tr>
<tr>
<td>36</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>60</td>
<td>4</td>
<td>9</td>
</tr>
</tbody>
</table>

\[
\frac{\Delta Qd}{\Delta P} = -\frac{1}{4} \quad \frac{\Delta Qs}{\Delta P} = \frac{1}{2}
\]

What is the equation for the demand curve (Qd=f(P))?

\[P = 48 + \frac{1}{2}Q \Rightarrow Qd = 96 - 2P\]

What is the equation for the supply curve (Qs=f(P))?

\[P = 76 - 8Q \Rightarrow Qs = 9 - \frac{1}{9}P\]

What is equilibrium P and Q?

What are the total gains from trade at equilibrium?

\[P = 76 - 8Q \Rightarrow \text{Gains} = 48 \]

What is the equation for the marginal revenue curve (MR=f(Q))?

\[MR = 6 + 6Q \Rightarrow \frac{dMR}{dQ} = 6\]

What is the equation for the marginal cost curve (MC=f(Q))?

\[MC = 6 + 6Q \Rightarrow \frac{dMC}{dQ} = 6\]

What is the Q that maximizes producer surplus?

\[P = 76 - 4Q \Rightarrow \text{Max Surplus} = 48\]

What is the P which maximizes producer surplus?

9. Draw a rough diagram, clearly showing equilibrium (#3) and the P & Q for the monopoly (#7 & #8).

4. Suppose our company can sell 4 units when the price is $32 and 5 units if the price is $30. What is our company's marginal revenue between 4 and 5?

\[MR = \frac{50 - 125}{5 - 4} = 22\]

Toyota faces competition from many other car companies. If Toyota raises prices, it will lose business to many other car companies around the world (GM, Volkswagen, etc.) and Yellow Cab operates in a regulated industry in which the price is set by law and only a limited number of licenses are issued. For its market, Yellow Cab seems to have much more market power than Toyota.
ECONOMICS 101  QUIZ #2B  NAME:  14 February 2017
COLUMBIA COLLEGE

You MUST SHOW YOUR WORK clearly either in the margins or on an attached sheet of paper for complete credit.

A. Market Power (40 pts) The market for widgets is:

<table>
<thead>
<tr>
<th>price</th>
<th>Qd</th>
<th>Qs</th>
</tr>
</thead>
<tbody>
<tr>
<td>24</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>48</td>
<td>6</td>
<td>11</td>
</tr>
<tr>
<td>72</td>
<td>2</td>
<td>17</td>
</tr>
</tbody>
</table>

1. \( Q^d = -\frac{1}{6}P + 14 \)
2. \( Q^s = \frac{1}{4}P - 1 \)
3. \( P = 36, Q^d - Q^s = Q^e \)
4. \( Q^s = 320 \)

What is the equation for the demand curve (Qd=f(P))?
What is the equation for the supply curve (Qs=f(P))?
What are equilibrium P and Q?
What are the total gains from trade at equilibrium?
What is the equation for the marginal revenue curve (MR=f(Q))?
What is the equation for the marginal cost curve (MC=f(Q))?
What is the Q that maximizes producer surplus?
What is the P which maximizes producer surplus?

5. MR = 84 - 12Q
6. MC = 4 + 4Q
7. CPU = 5
8. P = 54

9. Draw a rough diagram, clearly showing equilibrium (#3) and the P & Q for the monopoly (#7 & #8).

10. \( \frac{5}{2} = 18(P + \frac{3}{2}) = -117 \) New Qs = \( 30 \) \( 30 \) \( 75 \) Old Qs - New Qs = 192 75 - 192 = What is the change in consumer surplus caused by the monopoly?
11. \( \frac{5}{2} = (38 + \frac{3}{2})5 = 200 \) What is the producer surplus for the monopoly?
12. \( \frac{5}{2} = 90 - 18 = 72 \) What is the change in producer surplus caused by the monopoly/price searching?
13. What is the demand for the monopoly?

B. Short Answers (10 pts) From class and the textbook.

1. Which type of business has more market power: Toyota (which sells cars) or Yellow Cab of Vancouver (the company with the most taxis in Vancouver)? Explain why.

2. Suppose our company can sell 4 units when the price is $104 and 5 units if the price is $100. What is our company's marginal revenue between 4 and 5?

\[ MR(4) = \frac{416}{4} = 104 \]
\[ MR(5) = \frac{500}{5} = 100 \]
\[ \frac{MR(5) - MR(4)}{4} = \frac{84}{4} = 21 \]

Yellow Cab competitors don't compete with price.
You MUST show work clearly for the calculation problems.

1. (8 pts) Choose C, I, G, X, M or N (for none of the above) to show how the following transactions will be recorded in Canada’s GDP. Some transactions may require more than one answer.

A. (N) The bookstore hires some workers (because there are many new customers).
B. (G) The government hires some workers to build a road.
C. (M) You buy a new care that was made in Japan.
D. (N) The government decides to increase OAS (old age security) by $150 per month.

2. (24 pts) Our economy produces only three final goods. Use 2015 as the base year.

<table>
<thead>
<tr>
<th>YEAR</th>
<th>Price</th>
<th>Quantity</th>
<th>Price</th>
<th>Quantity</th>
<th>Price</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>5</td>
<td>3</td>
<td>8</td>
<td>6</td>
<td>3</td>
<td>12</td>
</tr>
<tr>
<td>2014</td>
<td>8</td>
<td>4</td>
<td>6</td>
<td>7</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>2015</td>
<td>10</td>
<td>2</td>
<td>5</td>
<td>12</td>
<td>4</td>
<td>12</td>
</tr>
<tr>
<td>2016</td>
<td>9</td>
<td>5</td>
<td>6</td>
<td>11</td>
<td>6</td>
<td>10</td>
</tr>
</tbody>
</table>

5A. Calculate the nominal GDP and the nominal growth rate for each of the above four years.
5B. Calculate the real GDP and the real growth rate for each of the above four years.
5C. Calculate the GDP deflator and the inflation rate for each of the above four years.
5D. Calculate the CPI and the inflation rate for each of the above four years.

2. E. Which year had the highest standard of living? What number did you use to determine this?
F. Which year had the highest inflation rate? What number did you use to determine this?

3. (8 pts) Suppose the deflator went from 167.6 to 182.2 which the GDP in current dollars increased by 9.3%. What is the exact real growth rate?

\[
\frac{P_2}{P_1} = \frac{1.093}{182.2/167.6} = \frac{R_2}{R_1} = \frac{1.093}{1.087} = 1.005
\]

4. (10 pts) Suppose the population is 43.2 million, the participation rate is 70.2%, the unemployment rate is 9.5% and there are 22.2 million who are employed.

A. \( 43.2 - 34.9 = 8.3 \) m How many people are not able to work?
B. \( 24.5 - 22.2 = 2.3 \) m How many people are unemployed?

\[
\text{Unemployment} = \frac{2.2}{90.5} = 24.5
\]
<table>
<thead>
<tr>
<th>Year</th>
<th>N</th>
<th>( %N )</th>
<th>R</th>
<th>( %R )</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>15 + 48 + 36 = 99</td>
<td>XXX</td>
<td>30 + 30 + 48 = 108</td>
<td>XXX</td>
</tr>
<tr>
<td>2014</td>
<td>32 + 42 + 50 = 124</td>
<td>25.3%</td>
<td>40 + 35 + 40 = 115</td>
<td>6.5%</td>
</tr>
<tr>
<td>2015</td>
<td>20 + 60 + 48 = 128</td>
<td>3.2%</td>
<td>50 + 55 + 90 = 145</td>
<td>13.3%</td>
</tr>
<tr>
<td>2016</td>
<td>45 + 66 + 60 = 171</td>
<td>33.6%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Project</th>
<th>( %P )</th>
<th>V</th>
<th>CPI</th>
<th>( %P )</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>91.7</td>
<td>XXX</td>
<td>10 + 96 + 36 = 142</td>
<td>110.9</td>
<td>XXX</td>
</tr>
<tr>
<td>2014</td>
<td>107.8</td>
<td>17.6%</td>
<td>16 + 72 + 60 = 148</td>
<td>115.6</td>
<td>4.2%</td>
</tr>
<tr>
<td>2015</td>
<td>100</td>
<td>-7.2%</td>
<td>128</td>
<td>100</td>
<td>-13.5%</td>
</tr>
<tr>
<td>2016</td>
<td>117.9</td>
<td>17.9%</td>
<td>18 + 72 + 72 = 162</td>
<td>126.6</td>
<td>26.6%</td>
</tr>
</tbody>
</table>
ECONOMICS 101 QUIZ #4 A 4 April 2017

NAME

1. (10 pts) YAD/YAS -- Let YAD=3100+8(G-T)+6(Ms)-40P, YAS=2000+25P, G=2300, T=2000, Ms=500 and Yf=4000

3 a. P=100, Y = 4500 _______________ What is equilibrium P and Y?

3 b. Is this economy in a bubble or in a recession? Explain.  

3 c. Draw a "Phillips curve", and show where this economy is on that Phillips curve. Is inflation high or low? Is unemployment high or low?

3 d. The government wants to use "fiscal policy" to get to full employment. If only fiscal policy is used, what is the "deficit" going to be at full employment?  

3 e. The government wants to use "monetary policy" to get to full employment. If only monetary policy is used, what is the %ΔM necessary to get to full employment? 

2. (4 pts) Deficits and Debts -- In 2015, tax revenue is $600, Non-interest spending is $550 and the current interest rate on debt is 12%. At the beginning of 2015, government debt is $1000.

2 a. $1000+70=1070 _______ What will the debt be at the end of 2015?

2 b. $-110.9 _______ If tax revenue increases by 10% and non-interest spending rises by 15%, what will the deficit be in 2016 (the next year) if interest rates don’t change?

3. Interest rates and Present Value (4 pts) \[ PV = \frac{1500}{(1.02)^6} = 1024.52 \]

3 a. \[ A \text{ or } B \] ___________ If the interest rate is 10% should you pay A. ($1000 today) for a TV or B. ($1500 in four years)? Which is better (A or B)? By how much?

3 b. \[ 900\text{,}525.92 \] ________ What is the present value of a three year, $1 million bond with a coupon rate of 6% when today's interest rate is 10%?

4. Money (4 pts) In our country, consumers have deposits in near banks (credit unions, etc.) of $800. They have credit card balances outstanding of $2000. Consumers have $300 in their checking accounts and $500 in their savings accounts. They also have $400 of cash in their pockets and at home as well as $250 worth of gold. Businesses have $30 of cash in their cash registers, checking accounts of $50, and savings accounts of $450. Banks have $900 of cash inside their vaults. Consumers own $1000 worth of shares (stocks) in companies and $800 worth of bonds.

4 a. \[ $2100 \] ________ How much M1 is in this economy?

4 b. \[ $2600 \] ________ How much M2 is in this economy?

5. Open market operations. (4 pts) The demand for loanable funds is 200-600r and the supply is 120+200r (Q in billions).

5 a. \[ r = 10% \] ________ What is the current interest rate?

5 b. The central bank thinks the interest rate should be 12%. \[ 972,000 \] ________ What will be the “reserve bid price” of a three month $1 million T-bill?

5 c. Will the central bank be printing money or “eating” money?

5 d. How many dollars worth of T-bills with the central bank buy or sell?
6. (4 pts) Comparative Advantage
In one day the workers on island A can gather up to 42 coconuts or 56 fish. (Assume constant opportunity costs). On island B, workers can gather 42 coconuts or 21 fish. Assume people like to have equal numbers of coconuts and fish.

2 a. \( F = C = 24 \) Before trade, how many coconuts and fish are gathered on island A?

2 b. \( F = C = 14 \) Before trade, how many coconuts and fish are gathered on island B?

2 c. Draw a world production possibility curve (Coconuts on the Y-axis)

2 d. \( C = 6 \), \( F = 48 \) If people on the two islands are going to trade with each other, how many coconuts and fish will be gathered on island A?

2 e. \( C = 42 \), \( F = 0 \) On island B?

2 f. \( C = F = 27 \) After trade, how many coconuts and fish will be consumed on island A?

2 g. \( C = F = 21 \) After trade, how many coconuts and fish will be consumed on island B?

2 h. (4 pts) Let the international market for Canadian dollars be: \( Q_d = 500 - 200e \), \( Q_s = 230 + 100e \) (e is US $ per Can $)

2 a. \( e = \frac{220}{300} = .73 \) What is equilibrium e.

2 b. \( e \uparrow \) (Increase/decrease) What happens to e if foreign companies want to buy more businesses in Canada?

2 c. \( KA \rightarrow KA \) (CA/KA) Is this an increase or decrease in CA or KA?

\[
\begin{align*}
C &= 42 - \frac{3}{4}F \\
F &= C = \frac{3}{4}(84) = 63
\end{align*}
\]